Amendments to the Specification

Amend the title as shown below in marked form:

~~**SHEET COATER**~~ **METHOD FOR COATING A LIMITED LENGTH SUBSTRATE USING ROTATING SUPPORT AND AT LEAST ONE PICK-AND-PLACE ROLL**

Amend paragraphs 0001, 0030, 0035, 0036, 0038 and 0054 as shown below in marked form:

[0001] This application is a continuation-in-part of pending U.S. Patent Application Serial No. 09/757,955 filed January 10, 2001 and entitled COATING DEVICE AND METHOD (now U.S. Patent No. 6,737,113 B1) and of pending U.S. Patent Application Serial No. 09/841,380 filed April 24, 2001 and entitled ELECTROSTATIC SPRAY COATING APPARATUS AND METHOD, the entire disclosures of which are incorporated by reference herein.

[0030] The basic principles of operation of the devices shown in **Fig. 1a** through **Fig. 3** are described in detail in the above-mentioned U.S. Patent Application Serial No. 09/757,955 filed January 10, 2001, and in pending U.S. Patent Application Serial No. ~~(Attorneys Docket No. 55476US003)~~ 10/044,237 filed even date herewith and entitled COATING DEVICE AND METHOD USING PICK-AND-PLACE DEVICES HAVING EQUAL OR SUBSTANTIALLY EQUAL PERIODS, the entire disclosure of which is incorporated by reference herein.

[0035] The improvement diagram in **Fig. 4** further illustrates features of our invention. **Fig. 4** shows results that can be obtained by applying coating liquid to mounting roll **20** or contacting roll **12** of device **60** in **Fig. 1b** in a variety of operational modes. The modes involve variation in the contacting roll size and the width of an applied stripe of coating liquid. In **Fig. 4** and the other improvement diagrams depicted herein, a uniformity metric

referred to as the "dimensionless minimum caliper" is calculated by dividing the final minimum coating caliper found on the surface of sheet **24** by the final average coating caliper. The improvement diagram in **Fig. 4** is a ~~gray scale~~ shaded contour plot. The ~~gray levels~~ shadings assigned to various dimensionless minimum caliper ranges are noted in the legend. Black regions represent dimensionless minimum caliper values in the range of 0.3 to 0.6. ~~Dark gray~~ Black and white-striped regions represent dimensionless minimum caliper values in the range of 0 to 0.3. ~~Light gray~~ Gray regions represent dimensionless minimum caliper values in the range of 0.6 to 0.9. White regions represent dimensionless minimum caliper values in the range of 0.9 to 1. A dimensionless minimum caliper value of 0.0 indicates there is at least one uncoated spot on sheet **24** after operation of device **60**. A dimensionless minimum caliper value of 1.0 indicates a perfectly uniform coating on sheet **24** after operation of device **60**.

[0036] It is possible to apply very thick stripes of coating. These will often spread into wider stripes after the first passage through a nip. We define stripe width as the width immediately after the first passage of the stripe through a nip. We also define two dimensionless parameters (referred to in **Fig. 4** as the "dimensionless roll size" and "dimensionless stripe width") by dividing the actual contacting roll **12** circumference and the actual stripe width by the actual roll **20** circumference. Every point on the improvement diagram of **Fig. 4** thus represents a dimensionless roll **12** circumference and a dimensionless stripe width for the application of a single stripe of coating liquid and operation of device **60** for 20 revolutions. **Fig. 4** shows the results for combinations of dimensionless roll **12** sizes from 0 to 1 and dimensionless stripe widths from 0 to 1. Any point location on the improvement diagram represents a pair of choices for these variables. The ~~gray level~~ shading at that point location represents the attained dimensionless minimum caliper. White regions in **Fig. 4** thus represent operating conditions where the combination of roll **12** size and applied stripe width results in "good uniformity" (viz., a dimensionless minimum coating caliper greater than 0.9) across the coated face of sheet **24**. ~~Dark gray~~ Black or black and white-striped regions in **Fig. 4** represent operating conditions where the combination of roll **12** size and applied stripe width results in one or more voids or near voids on the coated face of sheet **24**.

[0038] Roll **12** sizes that are integer multiples and proper fractions of the roll **20** size preferably are avoided unless an appropriate value of stripe width is chosen and an adequate number of roll **20** revolutions is used. **Fig. 5** is an improvement diagram showing the results obtained for a two roll device (roll **20** plus roll **12**) after 200 revolutions of roll **20**. The improvement diagram in **Fig. 5** has much larger white regions than the improvement diagram in **Fig. 4**, illustrating the beneficial effect of operating the devices of the invention for a greater number of revolutions. Operating conditions in **Fig. 5** in which roll **20** is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 times larger than roll **12** are not desirable. These correspond to dimensionless roll **12** sizes of 1, 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, 1/8, 1/9, and 1/10 and are shown as black, ~~dark gray~~ black and white-striped or ~~light~~ gray vertically-extending regions in **Fig. 5**. Other dimensionless roll **12** sizes are also undesirable, such as those shown by the other light gray and black areas in **Fig. 5**. For example, dimensionless roll sizes corresponding to fractional ratios of 2/5, 2/7 and 2/9 are also undesirable along with roll sizes corresponding to the fractional ratios 3/5, 3/7, 3/8, 3/10 and 3/11.

[0054] The coating liquid can be applied in a variety of uneven patterns other than stripes, and by using methods other than the oscillating needle applicator shown in **Fig. 1**. For example, a pattern of droplets can be sprayed onto roll **12** or sheet **24** using a suitable non-contacting spray head or other drop-producing device. Examples of suitable drop-producing devices include point source nozzles such as airless, electrostatic, spinning disk and pneumatic spray nozzles. Line source atomization devices are also known and useful. The droplet size may range from very large (e.g., greater than 1 millimeter) to very small. The nozzle or nozzles can be oscillated back and forth across the substrate, e.g, in a manner similar to the above-described needle applicator. Particularly preferred drop-producing devices are described in the above-mentioned U.S. Patent Application Serial No. 09/841,380, and in pending U.S. Patent Application Serial No. 09/841,381 filed April 24, 2001 and entitled VARIABLE ELECTROSTATIC SPRAY COATING APPARATUS AND METHOD (now U.S. Patent No. 6,579,574 B1), the entire disclosure of which is incorporated by reference herein.